

What is claimed is:

1. A semiconductor device manufacturing method comprising a step of siliciding a polysilicon gate, the method comprising steps of:
 - forming first polysilicon serving as a gate on a semiconductor substrate;
 - forming a first insulating film on said semiconductor substrate to cover said first polysilicon;
 - forming a second insulating film on said first insulating film;
 - selectively etching said second insulating film until said first insulating film located on an upper surface of said gate is exposed;
 - selectively etching said first insulating film located on the upper surface of said gate until the upper surface of said gate is exposed;
 - burying a space in which said first insulating film is etched, and forming second polysilicon on said second insulating film;
 - etching said second polysilicon, exposing said second insulating film, and leaving said second polysilicon in said space;
 - etching said second insulating film;
 - etching said first insulating film;
 - forming high melting point metal covering said second polysilicon;
 - siliciding said second polysilicon by a heat treatment; and
 - removing unreacted said high melting point metal.
2. The semiconductor device manufacturing method according to claim 1, wherein
 - said first insulating film is formed to have such a thickness to leave a difference in height around said first polysilicon.
3. The semiconductor device manufacturing method according to claim 1, wherein
 - said first insulating film is formed to be thinner than said first polysilicon.

4. The semiconductor device manufacturing method according to claim 1, wherein

said first insulating film is formed to be thicker than said first polysilicon.

5. The semiconductor device manufacturing method according to claim 1, wherein

said second insulating film is formed to have such a thickness as to flatten a difference in height near said first polysilicon.

6. The semiconductor device manufacturing method according to claim 1, wherein

in the step of selectively etching said second insulating film, an etch-back method is used.

7. The semiconductor device manufacturing method according to claim 1, wherein

a condition for etching said first insulating film is that said second insulating film is hardly etched.

8. The semiconductor device manufacturing method according to claim 1, wherein

said second polysilicon is formed to have such a thickness as to flatten a difference in height near said space.

9. The semiconductor device manufacturing method according to claim 1, wherein

said second polysilicon is undoped polysilicon.

10. The semiconductor device manufacturing method according to claim 1, wherein

a dry etching method is used for etching.

11. The semiconductor device manufacturing method according to claim 1, wherein

said high melting point metal is one of titanium and cobalt.

12. A semiconductor device manufacturing method for

manufacturing a semiconductor device having a T type gate electrode, the method comprising steps of:

forming a lower gate electrode of said T type gate electrode on a semiconductor substrate;

sequentially forming a first insulating film and a second insulating film on said lower gate electrode;

selectively removing said second insulating film until said first insulating film located on an upper surface of said lower gate electrode is exposed;

selectively removing said first insulating film located on the upper surface of said lower gate electrode until the upper surface of said lower gate electrode is exposed; and

forming an upper gate electrode of said T type gate electrode in a space from which said first insulating film is removed.

13. The semiconductor device manufacturing method according to claim 12, wherein

said first insulating film is formed to have such a thickness as to leave a difference in height around said lower gate electrode.

14. The semiconductor device manufacturing method according to claim 12, wherein

said second insulating film is formed to have such a thickness as to flatten a difference in height around said lower gate electrode.

15. The semiconductor device manufacturing method according to claim 12, wherein

in the step of selectively removing said second insulating film, an etch-back method is used.

16. The semiconductor device manufacturing method according to claim 12, wherein

a condition for removing said first insulating film is that said second insulating film is hardly removed.

17. The semiconductor device manufacturing method according to claim 12, wherein

said space is formed to be wider than said lower gate electrode.

18. The semiconductor device manufacturing method according to claim 12, wherein

said upper gate electrode is formed to have such a thickness as to flatten a difference in height around said space.

19. The semiconductor device manufacturing method according to claim 12, wherein

a dry etching method is used for removing said first insulating film.

20. The semiconductor device manufacturing method according to claim 12, wherein

said upper gate electrode is formed by etching back metal of said upper gate electrode formed on an entire surface of said semiconductor substrate to bury said space.